



NASA's Earth Observing System (EOS) Data and Information System (EOSDIS) manages the data from EOS satellite instruments and other Earth science measurement systems. Distributed Active Archive Centers (DAACs) process, archive, and distribute EOSDIS data products. Each DAAC specializes in one or more of the Earth science disciplines that collectively constitute global change science. The data centers of the DAAC Alliance cooperate to provide a full range of support to meet the needs of their user communities.

The DAAC Alliance provides many products and programs that are valuable teaching and learning resources. These products are available through the Web and/or on physical media, including CD-ROMs, videocassettes, and printed materials. The programs include interactive online activities and even classroom participation in mission activities. The hands-on programs are learning and skill-building assets for enriching the educational environment and enhancing student interest in the Earth sciences.

For more information about the items in this publication, contact the data center of interest. To obtain these and other EOSDIS data products, contact any of the data centers, or access the EOS Data Gateway (EDG) online search-and-order system at

<http://eos.nasa.gov/imswelcome>

For information about the DAAC Alliance centers and their data products and services, see

<http://nasadaacs.eos.nasa.gov>

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The symbol at the beginning of each product or program identifies the medium on which it is available. The symbols are defined below:



Electronic availability



CD-ROM



Booklets and brochures



Videocassette



Trading cards



Poster



Interactive online activity, classroom activity

ASF DAAC

Alaska SAR Facility DAAC

Synthetic Aperture Radar (SAR), Sea Ice, Polar Processes,
Geophysics



Glacier Power: A curriculum supplement module that lays a solid foundation in the exciting subject of glaciers. Glacier Power has been developed by the ASF Education Outreach at the Geophysical Institute. It contains a complete teacher's guide that includes review questions, vocabulary, activities, projects, and lesson plans. Two slide shows include "Glaciers of Alaska" and "Expedition Up McKinley." The guide is available in Acrobat Reader files for printing. The CD-ROM includes Netscape, an installer, and other necessary software; it may be ordered for a postage and handling fee. Glacier Power is suitable for students in grades 4 through 8.



Alaska SAR Facility European Remote Sensing Satellite (ERS-1) SAR Image Sampler: A CD-ROM for junior high and high school use. It has a \$10 fee.

For additional information or assistance, contact

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GES DAAC

GSFC Earth Sciences DAAC


Upper Atmosphere, Atmospheric Dynamics, Global Land
Biosphere, Global Precipitation, Ocean Color and
Surface Temperature


The GES DAAC education Web page contains links to educational resources, online materials, and related Earth science education pages. The items below are some of the products available from the GES DAAC. For other products, see http://daac.gsfc.nasa.gov/DAAC_DOCS/daac_ed.html.




Classic Coastal Zone Color Scanner (CZCS) Scenes: Ocean color data that provide an incomparable view of the changeable patterns of biological activity in the marine realm. The data indicate how and where physical processes interact with the biological communities of the ocean. The images are striking examples of ocean color data obtained by remote sensing from space. An explanation of each concept is included. This product is suitable for high

school and college. See http://daac.gsfc.nasa.gov/CAMPAIGN_DOCS/OCDST/OB_Education.html.

 **Oceanography from the Space Shuttle:** An out-of-print pictorial survey of oceanic phenomena visible to the eye from space. *Oceanography from the Space Shuttle* is available from the Web only and is suitable for high school and college students. See http://daac.gsfc.nasa.gov/DAAC_DOCS/daac_ed.html.

 **Geomorphology from Space:** An out-of-print, 1986 NASA publication. The core of this book is a gallery of space imagery with 237 plates, each treating some geographic region where a land-form theme is exemplified. Commentary, photographs, locator maps, and sometimes a geological map accompany each plate. *Geomorphology from Space* is also available on CD-ROM, and is suitable for high school and college Earth science classes. To view this product, see http://daac.gsfc.nasa.gov/DAAC_DOCS/daac_ed.html.

 **The Global Scanner:** A quarterly newsletter that focuses on scientific disciplines related to global climate change and that also contains timely information on the GES DAAC. The *Global Scanner* is suitable for Earth science teachers and high school and college students. See http://daac.gsfc.nasa.gov/DAAC_DOCS/Newsletter/index.html.


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GHRC

Global Hydrology Resource Center

Hydrologic Cycle, Severe Weather Interactions,
Lightning, Convection

 **Lightning Detection From Space:** An online primer on lightning theory and formation, history of lightning observations, and present-day satellite-based remote sensing of lightning. See the Web site at <http://thunder.msfc.nasa.gov/primer>.

 **Educational Resources for Hydrology and Earth Sciences:** A Web page that contains resources for global change, hydrology, and science education. See http://ghrc.msfc.nasa.gov/uso/msfc_education.html.

For additional information or assistance, contact


User Services Office
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Web: <http://ghrc.msfc.nasa.gov/>


LaRC DAAC


Langley Research Center DAAC

Radiation Budget, Clouds, Aerosols, Tropospheric Chemistry

The LaRC DAAC's educational resource programs are designed to enhance the knowledge, skills, and experience for teachers by highlighting Earth science data into integrated disciplines of science, mathematics, technology, and related subject matter. These educational resources are available at no charge from the LaRC DAAC.

 **CERES S'COOL Project:** A program devised to enable classroom students to assist NASA scientists with ground truthing for the Clouds and the Earth's Radiant Energy System (CERES) experiment. The project supports NASA research on Earth's climate and employs science, math, and geography curriculums as students observe, compute, and locate vital information through ground truth observations. This program is suitable for students in grades 4 through 12.

 **Trading Cards:** Two sets of interactive cards (radiation budget and tropospheric chemistry) with six cards in each set: introduction, missions, science, instruments, satellite, and data. The cards help students understand how the atmosphere affects Earth's climate. Lesson plans and student activities are included to supplement the contents of the trading cards with multidisciplinary curriculums. Two sets of trading cards for tropospheric chemistry and clouds are in the planning stages. The cards are appropriate for grades 5 through 8, and are available at <http://eosweb.larc.nasa.gov/EDDOCS/>.

 **Visualization of ERBE Data:** An overview of the Earth Radiation Budget Experiment (ERBE) with an explanation of how scanner and non-scanner satellite instruments work. It is suitable for middle school through college.


For additional information or assistance, contact


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LP DAAC

Land Processes DAAC

Land Processes

 **LP DAAC Educational CD-ROM:** This educator's resource, designed for kindergarten through 12th grade, is available to teachers only. The CD-ROM contains Geographic Information System (GIS) lessons, teacher links, student links, GIS/Geographic Positioning System (GPS) tools, and other "Cool Projects." This product is HTML based and can be accessed by using either Internet Explorer or Netscape browsers. The CD-ROM is available from the LP DAAC User Services Office and is limited to one per request.

 **Landsat 7 Sample Data:** A CD-ROM with sample Landsat 7 Enhanced Thematic Mapper Plus (ETM+) data at a substantially reduced cost. Scenes were selected to provide representative multispectral imagery for a wide range of applications, enabling users to work with the data before purchasing scenes at the normal price. The data are ideal for use in education and are available in five themes: urban, geology, agriculture, forestry, and coastal/ hydrology. The data are described and can be ordered at <http://edcdaac.usgs.gov/samples/index.html>.


For additional information or assistance, contact

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NSIDC DAAC

National Snow and Ice Data Center DAAC

Snow and Ice, Cryosphere and Climate

 **The Cryosphere:** NSIDC's Web site for information on where the world is frozen. For a general introduction to the cryosphere, read about the different forms of snow and ice that make up the frozen part of the Earth in *Cold Facts: Earth's Snow, Ice, and Frozen Soils*. Learn more about the components of the cryosphere, such as glaciers, Arctic meteorology, snow, the state of the cryosphere, and ice shelves and icebergs. See <http://nsidc.org/cryosphere/index.html> for this content and links to the following Web pages:


* **All About Glaciers:** A Web site that offers something for everyone, from grade school students to glaciologists. *All About Glaciers* explores nearly all aspects of glaciers and has helpful features like a question-and-answer section, quick facts, a glossary, a gallery, a bibliography, and links to related Web sites. The content on this site is also available in the booklet *Glaciers*.

* **State of the Cryosphere:** An overview of the status of snow and ice as indicators of climate change. *State of the Cryosphere* examines how the cryosphere is sending signals of a changing climate. This Web site also provides time-series data for Northern Hemisphere snow cover, mountain glacier fluctuations, and current permafrost conditions.

* **All About Snow:** A Web resource containing interesting facts about snow, a glossary of snow terms, and answers to frequently asked questions about snow. Also included are links to other Web resources about lake-effect snow and snow crystal images and information. Several online brochures are available and include information on the history of snow removal efforts in the United States, a

guide to avalanche safety, and the historic Blizzard of 1996.

* **Ice Shelves and Icebergs:** A Web site that summarizes the monitoring of changes in the extent and stability of ice shelves in the Antarctic Peninsula. Using satellite data from the AVHRR and MODIS sensors, NSIDC regularly reviews images of ice shelves and coastlines considered susceptible to rapid change. A history of ice shelf events is provided from January 1995, when a large area of the Northern Larsen Ice Shelf broke away from the Antarctic Peninsula, and again in March 2002 when the Larsen B Ice Shelf calved. This site has a satellite image archive with images used to monitor recent ice shelf events, links to the National Ice Center for news about icebergs that have recently calved from Antarctica, and methods for tracking their movement.

 **Into the Arctic:** A CD-ROM designed to offer instructional materials and activities for teachers. Information and activities are divided into four sections, which range from broad (Climate and Climate Change) to more specific subjects (El Niño and the Greenland Ice Sheet Project 2). They provide a background in Earth science that can then be applied using broadly related case studies. It is suitable as a teacher resource and for high school and college students. Order at <http://nsidc.org/data/arcss-69.html>.


For additional information or assistance, contact

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ORNL DAAC

Oak Ridge National Laboratory DAAC

Biogeochemical Dynamics


 **Educator's Corner:** A collection of resources primarily for educators teaching science in grades kindergarten through 12. The site is organized around selected themes from science curriculums. *Educator's Corner* provides Web links to classroom activities, lesson plans, images, glossaries, and educational puzzles, as well as to other science sites. *Educator's Corner* is available from the ORNL DAAC Web site at <http://www.daac.ornl.gov/educator/eduhome.html>.


For additional information or assistance, contact


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PO.DAAC Physical Oceanography DAAC


Oceanic Processes
Air-Sea Interactions


 **Catch the Wind: The QuikSCAT Story:** A video and resource guide based on the story of the QuikSCAT Scatterometer mission, designed to inspire and motivate students to become involved in science and technology. The activities in the companion resource guide (available in both hardcopy and PDF files) are designed to be used in science and math classes. This package is intended for educators only, grades 6 through 12. To order the package or download the guide, see <http://podaac.jpl.nasa.gov/edu>.

 **Perspectives on an Ocean Planet:** A CD-ROM that contains information on altimetry over the oceans and on the Ocean Topography Experiment (TOPEX)/Poseidon mission. This product is suitable for middle school to college and can be viewed and ordered at <http://podaac.jpl.nasa.gov/tec.html>.

 **Visit to an Ocean Planet:** An educational, multimedia CD-ROM that has lessons in climate, oceanography, and life in our oceans. It also contains "self-guided" tours covering topics such as "El Niño" and "Meet the Oceanographers," as well as information on the TOPEX/Poseidon mission and ocean topography. It is suitable for middle school to high school and can be ordered at <http://podaac.jpl.nasa.gov/edu>.

 **Education Web Pages:** Web pages containing information for oceanography and Earth science educators. Information is suitable for elementary grades through college. See <http://podaac.jpl.nasa.gov/edu>.

 **Oceanography Educator Package:** A collection of educational and informational materials concerning physical oceanography and the JPL satellite oceanography missions. The material is suitable for grade 8 and higher, and available to educators by request.


 **Rise and Fall of the '97-'98 El Niño Poster:** A colorful, folded poster with TOPEX/Poseidon satellite images showing El Niño on the front and providing information and classroom activities on the back. The poster can be viewed and ordered at <http://podaac.jpl.nasa.gov/edu>.


For additional information or assistance, contact


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SEDAC Socioeconomic Data and Applications Center

Population, Sustainability, Geospatial Data, Multilateral
Environmental Agreements

 **Gridded Population of the World:** A data set of estimated 1990 and 1995 population counts and densities based on population data from more than 200 countries. *Gridded Population of the World* is available at <http://sedac.ciesin.columbia.edu/plue/gpw/>. The data are referenced to a grid with a 2.5-arc-minute resolution to facilitate comparison with satellite imagery. Images are available for the globe and continental regions and can be used by teachers to show relationships between population distribution and physical characteristics of the Earth, such as deserts and topography. The images are suitable as teacher resources and for high school and undergraduate students. The data, available in standard GIS formats, are also suitable for teachers and undergraduate and graduate students.

 **Demographic Data Viewer (DDViewer):** An interactive thematic map server that enables customized displays of 225 socioeconomic variables from the 1990 U.S. census. The *DDViewer* is available at <http://plue.sedac.ciesin.columbia.edu/plue/ddviewer>. It is useful for statistics, geography, geographic information systems, environment, economics, and social studies courses, and appropriate for grade 9 and higher.

 **Environmental Treaties and Resource Indicators (ENTRI):** An online query of a relational database of international environmental treaties, treaty status files, and environmental resource indicators. *ENTRI*, available at <http://sedac.ciesin.columbia.edu/entri>, is useful for environment, natural resources, political science, law, and current or world events courses, and is appropriate for grade 9 and higher.

 **Thematic Guides:** Online overviews of some of the key issues regarding human interactions in the environment and global change. These guides, available at http://sedac.ciesin.columbia.edu/tg/guide_main.jsp, allow educators, students, and others to quickly access background materials and locate key data sets and information resources. The *Thematic Guides* are also designed to complement data-access tools such as the SEDAC Catalog Search Tool by providing context and background information. Newer guides (released after 2001) provide extensive bibliographies of references and related resources, including online articles, reports, research project summaries, and data sets, as well as many print publications.

For additional information or assistance, contact

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Cooperating Data/Service Provider

EOS Project Science Office

The EOS Project Science Office has produced many reference documents, brochures, posters, and other literature describing EOS missions and science applications.



EOS Educational CD-ROM: A collection of satellite data images and animations, accompanied by audio narration, that describe the interactions between the atmosphere, oceans, and land surfaces. This CD-ROM is intended as an introduction to global change and Earth system science, and includes a teacher's activity supplement.



NASA Facts Earth Science Series of Fact Sheets: These brochures explain several Earth science topics with easily understood text and graphics. Topics include El Niño/La Niña, global warming, ozone loss, volcanoes and climate, and polar ice.



NASA EOS Series of Color Lithographs: Lithographs complement many of the *NASA Fact Sheet* topics, and consist of satellite images or graphics, information on the source of the image, and a classroom activity on the topic.



NASA EOS Poster Series: Earth science posters with satellite imagery and graphics illustrate and describe the atmosphere, oceans, land surface, and polar ice processes as related to climate change. El Niño/La Niña, Terra satellite, and EOSDIS posters are also available.

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